

Claims:

1. A method of errorless switching, in a telecommunication network, from a basic data stream to a copy of the basic data stream obtained by bridging of the basic data stream at a first network node, the method
5 being characterized in that the switching is performed at a second network node receiving both the basic data stream and the copy data stream, upon performing an operation of delay equalization between the basic data stream and the copy data stream.

2. A method of on-line rearrangement of an original data stream
10 composed of two or more basic fragments transmitted in respective original time-slots, wherein one or more vacant data slots exist in the original data stream, the method comprises steps of:

- providing a first node and a second node interconnected to one another by a telecommunication path for transmitting the original data stream
15 from the first node to the second node,

- bridging one or more of said basic fragments at the first node, to obtain one or more respective copy fragments respectively occupying one or more of the vacant time slots,

- transmitting the obtained one or more copy fragments to the second
20 node along with said original data stream via the telecommunication path,

- performing the switching, according to Claim 1, with respect to each of said copy fragments, wherein said basic fragment constitutes the basic data stream, said copy fragment constitutes the copy data stream, and
25 said first and second nodes respectively constitute the first and the second network nodes, thereby ensuring substantially errorless rearrangement and obtaining a rearranged data stream.

3. The method according to Claim 2, for rearranging SDH/SONET data streams.

4. The method according to Claim 2, wherein the telecommunication path comprises one or more transmission lines.

5 5. The method according to Claim 2, comprising:

- multiplexing, after the step of bridging, all basic fragments of the original data stream with said one or more copy fragments into the form of an intermediate data stream to be transmitted to the second node, wherein the intermediate data stream includes fragments occupying all
10 the original time-slots and said one or more vacant time slots;

- demultiplexing the intermediate data stream at the second node.

6. The method according to Claim 5, wherein said step of switching is performed by:

- defining at least one pair of bridged fragments, each pair comprising a particular basic fragment occupying one of said original time-slots, and a
15 copy fragment of said basic fragment, occupying one of said vacant time-slots;

- equalizing delays between the basic fragment and the copy fragment in each of said pairs;

20 - assembling an outgoing data stream, using said at least one copy instead of the respective at least one basic fragment, thereby obtaining the rearranged data stream comprising at least one fragment transmitted in different time-slot than in the original data stream.

7. The method according to Claim 2, further comprising a step of
25 freeing one or more of the original time slots at the first node, for transmitting there-through one or more new signals.

8. The method according to Claim 2, wherein said delay equalizing operation comprises a step of pointers' justification with respect to at

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least one of said copy fragments and its corresponding basic fragment, while pointers of said basic fragment and the corresponding copy fragment serve mutual references to one another; payloads of standard frames of said fragments are thereby synchronized owing to mutual
5 adjusting positions of said pointers.

9. A system for errorless switching, in a telecommunication network, from a basic data stream to a copy of the basic data stream obtained by bridging of the basic data stream; the system comprises a first network node interconnected with a second network node via a
10 telecommunication path; said first node being capable of bridging said basic data stream, said second network being intended for receiving both the basic data stream and the copy data stream; the system also comprising a network management block and a delay equalizing means operative to perform delay equalization between the basic data stream
15 and the copy data stream before dropping the basic data stream.

10. The system according to Claim 9, designed for on-line rearrangement of an original data stream being composed of basic fragments transmitted in respective original time-slots while one or more vacant data slots exist in the original data stream, wherein said basic data
20 stream constitutes one of said basic fragments, and said copy data stream constitutes a copy fragment occupying one of said vacant time slots and obtained by bridging said basic fragment.

11. The system according to Claim 9, designed for SDH/SONET data streams.

12. The system according to Claim 9, wherein the telecommunication path comprises one or more transmission lines.

13. The system according to any Claim 9, wherein

- the first node includes a Network Element (NE), comprising a first cross-connect device having an input stage and an output stage, and its control unit;
- the second node includes a Network Element (NE), comprising a second cross-connect device having an input stage and an output stage, and its control unit;
- the first node is provided with a MUX unit connected at its input stage to the output stage of the first cross-connect, and the second node is provided with a DEMUX unit, wherein the output stage of the MUX unit is connected to the input stage of the DEMUX unit via the telecommunication path;
- the second node being also provided with the delay equalizing means connected between the output stage of the DEMUX unit and the input stage of the second cross-connect.

14. The system according to Claim 9, wherein said delay equalizing means are responsible for time aligning between the copy data stream and its corresponding basic data stream and comprises at least one unit capable of performing a pointers' justification operation for a single copy data stream and its corresponding basic data stream, by using thereof as reference for one another.

15. The system according to Claim 13, wherein the network management block, via the control units of the first and second nodes, is capable of causing:

the first cross-connect device - to double one or more particular basic fragments so as to output all the fragments of the original data stream and copies of the one or more basic fragments,

the MUX unit - to produce the intermediate data stream from the fragments outputted from the first cross-connect, and the DEMUX unit – to restore said fragments upon transmission,

the means for equalizing delays - to process at least one pair of
5 said particular basic fragments and their respective copy fragments in a predetermined order;

the second cross-connect device - to form an outgoing data stream comprising the rearranged original data stream wherein said one or more
10 basic fragments are respectively replaced with said one or more copy fragments.

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